

REMARKS

In the last Office Action, newly submitted figures 26-27 were objected to under 37 C.F.R. 1.83(a) as failing to show either the groove or the optical different refractive indexes as described in the specification. Claims 39, 43, 47, and 51 were objected to under various grounds. Claims 36-39, 57, 61 and 65 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Claims 36-39, 41-43, 45-47, 49-51, and 53-68 were rejected under various grounds (35 U.S.C §102(e)/103(a)) over various combinations of the references to Guerra '348, '507, and '940, Japan '075, Bricot, Lemelson, Morisawa, EP 0552887, and Maeda (US 5,491,678).

In accordance with the present response, independent claims 36, 41, 45 and 49 have been amended to further patentably distinguish from the prior art of record. Claims 36, 38, 39, 43, 47, 51, 57, 61 and 65 have also been amended to overcome the corresponding objections and Section 112, first paragraph, rejection. Claims 42, 53-56, 58-60, 62-64, and 66-68 have been further amended to conform to the foregoing claim amendments and to define the claimed invention with more specificity. Claims 36, 38, 39, 41-43, 45, 47, 49, 51 and 53-68 are currently pending in this application.

The amendments to the claims made herein do not raise new issues requiring further search and/or consideration. Instead, the claims have been generally amended to overcome the objections and rejections raised by the Examiner and to present them in a more narrow form by defining with more particularity the structure of the information reproducing apparatus and the steps of the information reproducing method, thereby placing the application in condition for allowance or otherwise reducing the issues which remain for appeal.

Applicants request reconsideration of their application in light of the foregoing amendments and the following discussion.

Drawing Objection

Newly submitted Figs. 26-27 were objected to under 37 C.F.R. 1.83(a) as failing to show either the groove or the optically different refractive indexes as described in the specification. According to the Examiner, while the grooves and substances in Figs. 26 and 27 are designated with reference numerals 1500 and 1600, respectively, "there is no clear indication as to what this refers to." Applicants respectfully disagree.

Figs. 26 and 27 were submitted in the supplemental response filed January 18, 2007 in order to comply with 37 C.F.R. §1.83(a) which requires that the drawings must show every feature of the invention recited in the claims. In Fig. 26, the grooves in the medium are clearly denoted with reference numeral 1500. In Fig. 27, the substances in the medium are clearly denoted with reference numeral 1600. Pages 42 and 49 of the specification, as amended in the supplemental response, provide clear descriptions for Figs. 26 and 27, including the grooves denoted by reference numeral 1500 and the substances denoted by reference numeral 1600.

Thus, the Examiner's position that it is unclear what the reference numerals 1500 and 1600 in Figs. 26 and 27 refer to is not understood by applicants. Nevertheless, applicants respectfully submit that Figs. 26 and 27 clearly show and identify the grooves and substances with reference numerals 1500 and 1600, respectively, as set forth above. Accordingly, applicants respectfully submit that Figs. 26 and 27 are in full compliance with 37 C.F.R. §1.83(a) and request that the objection thereof be withdrawn.

Claim Objections

Claims 39, 43, 47 and 51 were objected to as failing to further limit the base claim from which they depend. According to the Examiner, "defining what the mark represents does not limit the apparatus." Applicants respectfully disagree with the Examiner's contention.

Each of dependent claims 39, 43, 47 and 51 is directed to the specific structure of the linear mark recited in the corresponding base claim. In this regard, each of claims 39, 43, 47 and 51 includes the additional limitation that the plurality of linear marks comprise a plurality of linear data marks and a plurality of tracking marks.

Thus, dependent claims 39, 43, 47 and 51 further define the structure of the linear marks recited in base claims 36, 41, 45 and 49 as constituting linear data marks and tracking marks. As recited in each of the base claims, the linear marks form part of the medium which in turn is a structural component of the information reproducing apparatus of base claims 39, 43 and 47 and a positively recited component of the "providing" step in the information reproducing method of base claim 49. Stated otherwise, claims 39, 43, 47 and 51 further define the structure of the medium recited in base claims 36, 41, 45 and 49 and, therefore, further define or limit the overall structure of the

information reproducing apparatus of base claims 36, 42, 45 and the overall procedure of the information reproducing method of base claim 49.

Nevertheless, claims 39, 43, 47 and 51 have been amended herein to further define the structure of the signal processing circuit (claims 39, 43), signal processing means (claim 47) and to recite the step of calculating a difference of signals for tracking (claim 51). Accordingly, as amended, claims 39, 43, 47 and 51 further define or limit the information reproducing apparatus (claims 39, 43, 47) and information reproducing method (claim 51) recited in claims 39, 43, 47 and 51.

In view of the foregoing, applicants respectfully submit that the objections to claims 39, 43, 47, and 51 have been overcome and should be withdrawn.

Rejection Under 35 U.S.C. §112, First Paragraph

Claims 36-39, 57, 61 and 65 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.

With respect to independent claim 36, the Examiner contends that the disclosure does not provide for an embodiment in which the linear marks are provided "without different directions", that is, the linear marks extending in

different directions from one another. Independent claim 36 was presented to recite that the linear marks are disposed in the information unit field in overlapping relation to one another without the limitation that the linear marks also extend in different directions from one another, as recited in other independent claims. The omission of this limitation simply broadens the claim, and the claim is fully supported by the disclosure. Applicants respectfully submit that this broader form of independent claim 36 does not cause the claim to be in failure of compliance with the written description requirement of Section 112.

Nevertheless, in order to advance prosecution, and without prejudice or admission, independent claim 36 has been amended to recite that the medium has an information unit field and a plurality of linear marks disposed in the information unit field in overlapping relation to one another and extending in different directions from one another, thereby rendering the Section 112 rejection with respect to this claim moot.

With respect to claims 39, 43, 47 and 51, the Examiner contends that the disclosure, and particularly Fig. 7, does not support the feature of a "plurality of overlapping data marks." However, these claims do not require a "plurality of overlapping data marks", but rather require a

plurality of "linear data and tracking marks disposed in overlapping relation to one another" (i.e, the tracking marks are disposed in overlapping relation with the linear data marks).

To further clarify this feature, claims 39, 43, 47 and 51 have been amended to recite that the linear marks comprise "a plurality of linear data marks and a plurality of tracking marks disposed in overlapping relation to the plurality of linear data marks."

In view of the foregoing, applicants respectfully submit that the rejection of the claims under 35 U.S.C. §112, first paragraph, should be withdrawn.

Traversal of Prior Art Rejections

Applicants respectfully traverse the prior art rejections of claims 36-39, 41-43, 45-47, 49-51, and 53-68 under various grounds (35 U.S.C §102(e)/103(a)) over various combinations of the references to Guerra '348, '507, and '940, Japan '075, Bricot, Lemelson, Morisawa, EP 0552887, and Maeda (US 5,491,678).

Figs. 1, 5 and 7 show an embodiment of an information reproducing apparatus according to the present invention embodied in amended independent claim 36. With reference to the embodiment in Figs. 1, 5 and 7, the

information reproducing apparatus has a light source 102 for generating linearly polarized light, and a medium having an information unit field and a plurality of linear marks 227, 228 and 229 disposed in the information unit field in overlapping relation to one another and extending in different directions from one another. An optical head 104 is disposed between the light source 102 and the medium 101 and has a fine aperture 103. The light source 102 includes a polarized light control portion for controlling the linearly polarized light generated by the light source 102 to pass through the fine aperture 103 of the optical head 104 to generate near-field light having a preselected polarization direction and to irradiate the linear marks disposed in the information unit field of the medium with the near-field light so that the preselected polarization direction of the near-field light is orthogonal to a longitudinal axis of each of the linear marks. A detector 105 detects light scattered by the linear marks irradiated with the near-field light. A signal processing circuit processes a signal from the detector 105 corresponding to the detected scattered light. The signal processing circuit comprises a control circuit 222 having a head drive circuit 225 for carrying out access/tracking control of the optical head and a read data output control circuit 226 for outputting read data.

By providing a medium having an information unit field and a plurality of linear marks disposed in the information unit field in overlapping relation to one another and extending in different directions from one another, the recording density of the information reproducing apparatus is enhanced. Furthermore, by providing a light source that includes a polarized light control portion that irradiates the linear marks of the medium with the near-field light so that the preselected polarization direction of the near-field light is orthogonal to a longitudinal axis of each of the linear marks, light scattered by the linear mark of the medium has an intensity which is sufficiently high to permit high-density reproduction of information. Thus, the present invention provides a high-density near-field information reproducing apparatus and corresponding near-field information reproducing method.

Each of the prior art grounds of rejections of claims 36-39, 41-43, 45-47, 49-51, and 53-68 is based on the teachings of the primary reference to Guerra '348/'507 as modified by the secondary reference to Maeda. As recognized by the Examiner, Guerra '348/'507 does not disclose or suggest a medium having linear marks in overlapping relation to one another, as required by each of independent claims 36, 41, 45 and 49. For this purpose, the Examiner cited Maeda as

purportedly disclosing a medium having a plurality of linear marks in overlapping relation to one another. According to the Examiner, one of ordinary skill in the art would have found it obvious, at the time the invention was made, to modify the medium of Guerra '348/'507 with a plurality of linear marks in overlapping relation to one another. Applicants respectfully traverse the Examiner's contention.

The proposed combination of Guerra '348/'507 and Maeda is improper because the prior art teaches away from the claimed combination. A reference teaches away when a person of ordinary skill in the art, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that the applicants took. In re Gurley, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994). Stated otherwise, a reference teaches away if it suggests that the line of development falling from the reference's disclosure is unlikely to be productive of the result sought by applicants. W.L. Gore & Assocs. v. Garlock, Inc., 220 USPQ 303, 311 (Fed. Cir. 1983) (the totality of a reference's teachings must be considered), cert. denied, 469 U.S. 851 (1984); In re Caldwell, 138, USPQ 243, 245 (CCPA 1969) (reference teaches away if it leaves the impression that the product would not have the properties sought by the applicant).

In this case, the prior art teaches away from the claimed combination because Guerra '348/'507 are concerned with providing an information reproducing/recording apparatus of reduced size and by which increased recording density is achieved. In contrast, the Examiner's proposed modification of Guerra '348/'507 in view of Maeda would result in an apparatus which is increased in size and by which recording density is decreased.

More specifically, Maeda is directed to a method and apparatus for recording/reproducing information data in a two-dimensional format. As shown in Fig. 2 of Maeda, a coding pattern of a pit group which is formed in a disk plane consists of four vertical lines and four horizontal lines as one block. Data is represented by a round hole pit 30 present at grid points.

However, in Maeda a plurality of optical spots are employed to prevent a positional relationship of pits in a track radial direction from being shifted, and data is scanned while keeping these optical spots mutually shifted with respect to the track radial direction. Therefore, the system in Maeda increases the overall size of the apparatus in that it requires many additional elements to achieve recordal and/or reproduction of information data.

Furthermore, in Maeda, the positional relationships of the pits are determined by a coding rule in which the reproduction signal cases shown in Fig. 15B (i.e., the pits are in contact with each other) and Fig. 15C (i.e., the pits are overlapped with each other) never happen to occur simultaneously (col. 8, lines 16-36). Thus, even if the overlapping of pits or data marks can provide for the increase of the recording density, the coding rule disclosed by Maeda would decrease the recording density.

Thus, contrary to the Examiner's contention, one of ordinary skill in the art at the time the invention was made would not have been led by the teachings of Maeda to modify the medium of Guerra '348/'507 with a plurality of linear marks in overlapping relation to one another as set forth above. Accordingly, independent claims 36, 41, 45 and 49 are not rendered obvious by the teachings of Guerra '348/'507 and Maeda because the references do not suggest the modifications that would be needed to replicate the claimed invention. In the context of obviousness rejections based upon the purported obviousness of effecting a required modification, the Federal Circuit has held that "[t]he mere fact that the prior art may be modified in [a given] manner ... does not make the modification obvious unless the prior art suggested the desirability of the modification". In re

Fritch, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992). There is nothing in Maeda that would have suggested modifying the medium of Guerra '348/'507 with a plurality of linear marks in overlapping relation to one another as discussed above and recited by independent claims 36, 41, 45 and 49.

Moreover, each of independent claims 36 and 41 has been amended to recite a signal processing circuit that processes a signal from the detector corresponding to the detected scattered light, the signal processing circuit having a control circuit having a head drive circuit for carrying out access/tracking control of the optical head and a read data output control circuit for outputting read data. Independent claim 45 has been amended to recite signal processing means for processing a signal from the detecting means corresponding to the detected scattered light, the signal processing means comprising a control circuit having a head drive circuit for carrying out access/tracking control of the optical head and a read data output control circuit for outputting read data. Independent claim 49 has been amended to recite the step of processing a signal corresponding to the detected scattered light including carrying out access/tracking control of the optical head and outputting read data. No corresponding structure and step, in combination with the foregoing distinguishing features, is disclosed or suggested by the combined teachings of the references.

Moreover, amended independent claim 36 and each of independent claims 41, 45 and 49 recites that the plurality of linear marks are disposed in the information unit field in overlapping relation to one another and extending in different directions from one another. No corresponding feature is disclosed or suggested by the combined teachings of the references.

As recognized by the Examiner, the additionally cited references to Guerra '940, Japan '075, Bricot, Lemelson, Morisawa, and EP 0552887 do cure the deficiencies of Guerra '348/'507 as modified by Maeda. For example, Japan '075 and Bricot fail to teach such overlapping relation between linear marks disposed in an information unit field of a medium. Accordingly, one of ordinary skill in the art would not have been led to modify the references to attain the claimed subject matter.

Claims 37-39, 53-56, claims 42, 43, 57-60, claims 46, 47, 61-64, and claims 50, 51, 65-68 depend on and contain all of the limitations of amended independent claims 36, 41, 45 and 49, respectively, and, therefore, distinguish from the references at least in the same manner as claims 36, 41, 45 and 49.

Moreover, there are separate grounds for patentability of several of the amended dependent claims which are directed to the specific structure of the overlapping linear marks. No corresponding specific structures are disclosed or suggested by the prior art of record.

In view of the foregoing, applicants respectfully request that the rejections of claims 36-39, 41-43, 45-47, 49-51, and 53-68 under 35 U.S.C §102(e)/103(a)) over various combinations of the references to Guerra '348, '507, and '940, Japan '075, Bricot, Lemelson, Morisawa, EP 0552887, and Maeda be withdrawn.

In view of the foregoing amendments and discussion, the application is believed to be in allowable form. Accordingly, entry of this amendment and favorable reconsideration and allowance of the claims are most respectfully requested.

Respectfully submitted,

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